

**DOE-NABIR WORKSHOP:
Abstracts**

January 31 – February 2, 2000
Reston, Virginia

Natural and Accelerated Bioremediation Research Program

Table of Contents

Introduction	1
NABIR Program Staff.....	2
Agenda.....	3
Abstracts	5
Program Element 1: Biotransformation and Biodegradation.....	6
Program Element 2: Community Dynamics and Microbial Ecology	24
Program Element 3: Biomolecular Science and Engineering.....	33
Program Element 4: Biogeochemical Dynamics	50
Program Element 5: Assessment	57
Program Element 6: Bacterial Transport.....	70
Program Element 7: System Engineering, Integration, Prediction and Optimization.....	78
BASIC Program Element	80
NABIR-Related.....	83
Address List.....	86

Introduction
DOE–NABIR PI Workshop
January 31 - February 2, 2000

The mission of the NABIR program is to provide the scientific understanding needed to use natural processes and to develop new methods to accelerate those processes for the bioremediation of contaminated soils, sediments and groundwater at U.S. Department of Energy (DOE) facilities. The program is implemented through seven interrelated scientific research elements (Assessment, Bacterial Transport, Biogeochemical Dynamics, Biomolecular Science and Engineering, Biotransformation and Biodegradation, Community Dynamics/Microbial Ecology and System Engineering, Integration, Prediction and Optimization); and through an element called Bioremediation and its Societal Implications and Concerns (BASIC), which addresses societal issues and concerns of stakeholders through communication and collaboration among all relevant groups, including community leaders and representatives, engineers, scientists, lawyers, etc.

The initial emphasis of NABIR program research is on the bioremediation of metals and radionuclides in the subsurface below the root zone, including both thick vadose and saturated zones. The material presented at this year's workshop focuses on research funded in FY 1998-2000 by DOE's Office of Science through its Office of Biological and Environmental Research. Sixty-eight projects have been funded in the scientific program elements, and two have been funded in the BASIC program. Abstracts of these programs are summarized in this booklet, along with abstracts of other DOE programs related to research in the NABIR program.

NABIR Program Staff*

Office of Biological and Environmental Research (OBER)

John C. Houghton
NABIR Program Co-Coordinator
Manager: Biogeochemical Dynamics and System Engineering, Integration,
Prediction and Optimization Program Elements

Anna Palmisano
NABIR Program Co-Coordinator
Manager: Community Dynamics and Microbial Ecology, Biotransformation
and Biodegradation, and Assessment Program Elements

Daniel W. Drell
Manager: Biomolecular Science and Engineering Program Element
and BASIC Program

Paul Bayer
Field Activities Manager for the Field Research Centers

Frank J. Wobber
Manager: Bacterial Transport

Jerry W. Elwood
Acting Director, Environmental Sciences Division, OBER

NABIR Program Office

Terry C. Hazen (LBNL)
NABIR Field Research Center Coordinator

Linda Wuy (LBNL)
NABIR Program Office Team Manager

Mary Pratt (LBNL)
NABIR Program Office Team Writer/Editor

* Addresses, telephone numbers and e-mail addresses are in the Address List, page 86

Agenda
DOE–NABIR PI Workshop
January 31 – February 2, 2000

Monday, Jan. 31

- 8:30-9 a.m. Welcome, Opening Comments
- 9-9:30 a.m. Biogeochemistry (Fendorf, Stanford)
- 9:30-10 a.m. Biotransformation (Bolton, PNNL)
- 10-10:30 a.m. Break
- 10:30-11 a.m. Biotransformation (Kemner, ANL)
- 11-11:30 a.m. Proposed Field Research Center (Watson, ORNL)
- 11:30-noon Bioremediation and its Societal Implications and Concerns
- Noon-1:30 p.m. Lunch

Afternoon Session			
1:30 p.m.	Posters: Community Dynamics, BASIC Biomolecular, Bacterial Transport	Breakout: Metal-Microbe Interactions (Gorby-organizer)	Breakout: Scaling from Lab to Field (Hazen-organizer)
3 p.m.		Proposed Field Research Center: Q&A Session (Watson)	
4:30-6:30 p.m.	Poster/Happy Hour: Authors should be at posters		

Tuesday, Feb. 1

- 8:30-9 a.m. Assessment (Blake, Tulane)
- 9-9:30 a.m. Assessment (Chandler, PNNL)
- 9:30-10 a.m. Community Dynamics (MacNaughton, U. Tennessee)
- 10-10:30 a.m. Break
- 10:30-11 a.m. Community Dynamics (Konopka, Purdue)
- 11-11:30 a.m. Biomolecular (Clark, UC Berkeley)
- 11:30-noon Biomolecular (Giometti, ANL)
- Noon-1:30 p.m. Lunch

Tuesday, Feb. 1, continued

Afternoon Session			
1:30 p.m.	Posters: Biogeochemistry, Biotransformation, Assessment, Systems Integration, Data Management	Breakout: Molecular Methods for Community Fingerprinting (White- organizer)	Breakout: Metal Reducing Microbes (Frederickson- organizer)
3 p.m.		Roundtable: Communicating Bioremediation Research to Non-Scientists. (Bilyard, Bjornstad and Wolfe-organizers)	
4:30-6:30 p.m.	Poster/Happy Hour: Authors should be at posters		

Wednesday, Feb. 2

- 8:30-9 a.m. Field Research at UMTRA Sites (Long, PNNL)
- 9-10 a.m. Bacterial Transport/ Field Research at Oyster, VA (Onstott, Princeton)
- 10-10:15 a.m. Break

Breakout Sessions		
10:15-2 p.m.	Breakout: Field Research at Oyster, VA (ends at noon) Onstott, DeFlaun	Breakout: Field Research at UMTRA sites (ends at 2 p.m.) Long

2 p.m. Meeting adjourns